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POWER SOURCES:

- (a) The foregoing discussion is predicated upon the assumption that power sources presently available would have to be used. If an atomic energy powered engine were available, a small mass flow at a large velocity would accomplish the required lift and propulsive forces and the large energy expenditure would be of small importance.
- (b) However, the heat exchange requirements for the atomic powered engine appear to demand physical dimensions of inordinate size that presently would preclude the use of this power plant for aircraft. Experimental work in progress to convert the energy of the atomic pile directly to electricity, rather than heat, offer the promise of a more compact atomic power plant.

e. It has been established by Project Band investigations that would resources, technical estimations and existing materials are adequate to permit construction of a space ship.

CONCLUSIONS:

1. The flying anomaly observed, remains unidentified as to origin, construction and power source.
2. A definite trend of flight headings has evolved as generally south in bearing.
3. Supporting evidence from separate reliable sources establish existence of this configuration.
4. An aircraft of the configuration described could support itself in flight by aerodynamic means.

Robert E. Casider
Robert E. Casider
Captain, USMC
Project Officer

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ANALYSIS OF FLYING OBJECT INCIDENTS IN THE U. S.

SUMMARY AND CONCLUSIONS

PROBLEM

1. TO EXAMINE pattern of tactics of "Flying Saucers" (hereinafter referred to as flying objects) and to develop conclusions as to the possibility of existence.

FACTS AND DISCUSSION

2. A DETAILED discussion of information bearing on the problem as set forth above is attached as Appendix "A". The main points established therein are summarized below.
3. THE FREQUENCY of reported incidents, the similarity in many of the characteristics attributed to the observed objects and the quality of observers considered as a whole, support the contention that some type of flying object has been observed. Approximately 210 incidents have been reported. Among the observers reporting on such incidents are trained and experienced U.S. Weather Bureau personnel, USAF rated officers, experienced civilian pilots, technicians associated with various research projects and technicians employed by commercial airlines.
4. THE POSSIBILITY that reported observations of flying objects over the U.S. were influenced by previous sightings of unidentified phenomena in Europe, particularly over Scandinavia in 1946, and that the observers reporting such incidents may have been interested in obtaining personal publicity have been considered as possible explanations. However, these possibilities seem to be improbable when certain selected reports such as the one from U.S. Weather Bureau at Richmond are examined. During observations of weather balloons at the Richmond Bureau, one well trained observer has sighted strange metallic disks on three occasions and another observer has sighted a similar object on one occasion. The last observation of unidentified objects was in April, 1947. On all four occasions the weather balloon and the unidentified objects were in view through the theodolite. These observations at the Richmond Bureau occurred several months before publicity on the flying saucers appeared in a U.S. newspaper.
5. DESCRIPTIONS OF the flying objects fall into three configuration categories: (1) disk-shaped (2) rough cigar-shaped (3) balls of fire. Varying conditions of visibility and differences in angles at which the objects may have been viewed introduces a possibility that a single type object may have been observed rather than three different types. This possibility is further substantiated by the fact that in the areas where such objects have been observed the ratio of the three general configurations is approximately the same.
6. THEREFORE, IT appears that some object has been seen; however, the identification of that object cannot be readily accomplished on the basis of information reported on each incident. It is possible that the object, or objects, may have been domestically launched devices such as weather balloons, rockets, experimental flying wing aircraft, or celestial phenomena. It is necessary to obtain information on such domestic activity to confirm or deny this possibility. Depending upon the degree with which this may be accomplished, foreign devices must then be considered as a possibility.
7. THE PATTERN of sightings is definable. Sightings have been most intense throughout the states bordering the Atlantic and Pacific coast lines, and the central states of Ohio and Kentucky. A map showing location of sightings is attached as Appendix "B"

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8. THE ORIGIN of the devices is not ascertainable. There are two reasonable possibilities:

(1) The objects are domestic devices, and if so, their identification or origin can be established by a survey of all launchings of airborne objects. Domestic flying wing type aircraft observed in various aspects of flight might be responsible for some of the reported flying objects, particularly those described as disks and rough cigar shapes. (See Appendices "C" and "D".) Among those which have been operational in recent years are the XF5U-1 ("Flying Flapjack") developed by Chance-Vaught, the Northrup B-35, and the turbo-jet powered Northrup YB-49. The present existence of any privately developed flying-wing type aircraft has not been determined but one such aircraft, the Arup tailless monoplane, was operational at South Bend, Indiana, prior to 1935. (2) Objects are foreign, and if so, it would seem most logical to consider that they are from a Soviet source. The Soviets possess information on a number of German flying-wing type aircraft such as the Gotha P60A, Junkers EF 130 long-range, high-speed jet bomber and the Horten 229 twin-jet fighter, which particularly resembles some of the description of unidentified flying objects (See Appendix "D"). As early as 1924 Tscheranowsky developed a "Parabola" aircraft, an all wing design, which was the outcome of considerable Soviet experimentation with gliders of the same general form. Soviet aircraft based on such designs might have speeds approaching trans-sonic speeds attributed to some flying objects or greater over-all performance assuming the successful development of some unusual propulsion device such as atomic energy engine.

9. THAT THE Soviets have a current interest in flying-wing type aircraft is suggested by their utilization of Dr. Guenther Bock who, at the end of World War II, was in charge of the flying-wing program in Germany (See Appendix "A", paragraph 3, page 4). Achievements satisfactory to the U.S.S.R. are indirectly indicated by the personal recognition he is reported to be receiving in the U.S.S.R. Recently it has been reported that the U.S.S.R. is planning to build a fleet of 1,800 Horten flying-wing aircraft. Information of low evaluation has been received stating that a regiment of jet night fighters, Model Horten XIII, is at Kuzmikh, an air base two miles southwest of Irkutsk. Kuzmikh is identified as one of a number of airfields for the protection of an atomic energy plant at Irkutsk. The Horten XIII as developed by Germany was a glider.

10. ASSUMING THAT the objects might eventually be identified as foreign or foreign-sponsored devices, the possible reason for their appearance over the U.S. requires consideration. Several possible explanations appear noteworthy, viz:

a. To negate U.S. confidence in the atom bomb as the most advanced and decisive weapon in warfare.

b. To perform photographic reconnaissance missions.

c. To test U. S. air defenses.

d. To conduct familiarization flights over U.S. territory.

CONCLUSIONS

11. SINCE the Air Force is responsible for control of the air in the defense of the U.S., it is imperative that all other agencies cooperate in confirming or denying the possibility that these objects have a domestic origin. Otherwise, if it is firmly indicated that there is no domestic explanation, the objects are a threat and warrant more active efforts of identification and interception.

12. IT MUST be accepted that some type of flying objects have been observed, although their identification and origin are not discernable. In the interest of national defense it would be unwise to overlook the possibility that some of these objects may be of foreign origin.

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(3) Incident #3 (Continued)

Although the dates seem to indicate that this sighting could not be the same as that described in Incident 1, yet the major portion of this testimony refers to a "blue white light". Observations in the first instance describe a "blue glow" running the entire length of the fuselage. When viewed from the ground it is logical to assume that the blue glow would be mostly visible.

NOTE: In this connection, Dr. Josef Allen Hynek, astro-physicist, CSLRF, who is presently to serve as consultant on this project, has advised that it is possible for a celestial body to appear to travel in a straight line and slant downwards. (It is extremely improbable, although aerodynamically possible, for some objects to achieve an effect of lift through the forces generated during their flight through the atmosphere). It is his further opinion that it is impossible for any celestial body to maneuver violently and make sharp turns. It is extremely unlikely for heavenly bodies to appear to move slowly when passing through the lower layers of the atmosphere, but, from greater distances, it is possible to observe far-distant bodies for extended periods of time. Objective size is contingent upon (1) distance of the heavenly body from the earth and (2) its mass. The manner of disappearance of a meteor is like a light suddenly blinking off.

(4) Incident #4

Object #4 was observed by ~~Shaw, et al.~~ between the hours of 2045 and 2050, 26 July 1948, at Columbus, Georgia and Augusta, Georgia. Description of this object seems to indicate that it was a meteor. Five of the observers said that the object was "football shaped"; that it appeared to be a green light with a silvery tail and that it observed level flight. The last observer stated that the speed was "10,000 to 20,000 mph" and that "it appeared to be 1/3 the size of a full moon", and that "it was a multi-colored, brilliant light trailing burning fragments". The terrific speed together with the description of a multi-colored light trailing burning fragments seems to establish this object as a meteor.

D. COMMENTS:

1. The only incident which possesses absolute intelligence significance is Incident #1. It is obvious that this object was not a meteor. There has been no evidence to support any findings of unreliability, nor have there been any major inaccuracies on the part of the witnesses.
2. Weather reports establish areas of visibility as stated in the observers' reports.
3. Available information from ~~Shaw, et al.~~ and other, failed to reveal any evidence of testing devices to which this incident could be attributed.

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b. To exclude irrelevant factors in a systematic manner, the information presented in Exhibit "B" is presented in the order of occurrence and significance.

(1) Incident #1

- a. Object was sighted 24 July 1948 between 0140 and 0150Z from the ground at Robins Air Force Base, Macon, Georgia.
- b. Object was again sighted from an altitude of 5,000 feet by [redacted] and [redacted] while flying a DC-3 some 20 miles south of Montgomery, Alabama. The time of the sighting was 24 July 1948 at approximately 0245 EST.
- c. Both the [redacted] sighting and that of [redacted] and [redacted] describe the object as "cigar" or "cylindrical" in shape. [redacted] perceived only the glow emitted by it.
- d. All observers agree that the object was traveling in a general southerly heading and that it was trailed by a flame varying in color and that it behaved like a normal craft insofar as disappearing from the line of sight was concerned.

NOTE: It is a known fact that atmospheric conditions such as varying degrees of humidity and incidence of light refraction often influence the color of the light observed. This would serve to explain why many observers conflict in their descriptions as to color of light displayed by the object or its trail.

- e. Four witnesses to this sighting are involved; three are trained observers. In no instance were there any indications of subversive or ulterior influences involved.
- f. Both the [redacted] account and that of [redacted], [redacted] and [redacted] were officially made within a period of time that would preclude any chance of impressions being gained from radio or newspaper reports.

(2) Incident #2

Incident #2 was observed by [redacted], [redacted] and [redacted] at 0230 hours 24 July 1948, while enroute, between Blackstone, Virginia, and Greensboro, North Carolina. This sighting is considered separately since the descriptions of speed as "meteoric" or "terrific", the manner of travel described as an arc or horizontal, and the fact that it "looked like a meteor" seem to indicate that the object seen was not the one observed in Incident 1.

(3) Incident #3

This object was observed between 2100 and 2300 hours 26th July 1948 at [redacted], Georgia, by observers [redacted], [redacted], [redacted], Mrs. [redacted], [redacted] and [redacted]. This object was not thought to be a meteor in this instance. The glow was described as varied in color but predominantly brilliant blue-white. The course was described as generally "southern".

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COUNTRY	United States	REPORT NO.	102-122-79	CLASSIFICATION	
AIR INTELLIGENCE INFORMATION REPORT					
SUBJECT	Unidentified Flying Object				
AREA REPORTED ON	Alabama, Georgia, and Virginia	FROM OFFICE	Tech Intelligence Div. Intelligence Dept. Wright-Patterson AFB, Dayton, Ohio		
DATE OF REPORT	20 December 1948	DATE OF INFORMATION	24 and 26 July 1948	FORM	A-2
REPORTED BY	Robert R. Snodder, Captain, USAF	U. S. CITIZENS			
REFERENCES	Checked sources, direction, previous report, etc. as appropriate. Proj. "SIG" ltr. Dept. of the AF, Hq USAF, dated 30 Dec 47 "Flying Discs"				
<p>SUMMARY: Enter concise summary of report. Give reproduction in text where necessary. List references at end of report. Do not exceed 10% of report.</p> <p>Detailed interrogations have been completed of persons reporting unidentified flying objects in the vicinity of Montgomery, Alabama, 24 and 26 July 1948, between the hours of 2130 and 0205.</p> <p>Analysis has been made of the compiled statements and the other available evidence of each individual interrogated. The analysis was undertaken as only one of 219 reported incidents with an objective of arriving towards a definite pattern -- trend in order to determine whether the objects reported were of domestic or foreign origin, or a natural phenomenon.</p> <p>COMMENTS: Analysis of data under Incident #1144 reveals that four separate cases are involved; one having occurred on 24 July 1948 and the others on the 26 July 1948. A preponderance of evidence is available to establish that in almost all cases an unidentified object was seen within the times stated and on the same dates over an extended area pursuing a general course South. Descriptions as to size, shape, color and movements are fairly consistent.</p>					
APPROVED: R. A. LINNELL Major, USAF Asst. Chief, Operations Section Tech Intelligence Division Intelligence Department		 ROBERT R. SNODDER Captain, USAF Project Officer Special Projects Branch Technical Intelligence Division Intelligence Department			
APPROVED: R. L. LINNELL Colonel, USAF Chief, Technical Intelligence Division Intelligence Department					
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A. ORIGIN:

In compliance with verbal instructions from Maj General Cabell, Director of Intelligence, AFOT, this Hq proceeded to investigate the report concerning the sighting of an unidentified aerial object in the vicinity of Montgomery, Alabama, occurring 24 July 1948 between the hours of 0140 and 0245 EST.

3. ACTION INITIATED:

1. On 25 July 1948, Major R. A. Llewellyn, Project "SIG" Officer, Mr. A. Jarnood, Technical Assistant to Col Clingerman, Mr. A. C. Loedding, Assistant Deputy for Technical Analysis Division, and Capt R. J. Groseclose, Security Officer, proceeded to Atlanta, Georgia, where they interviewed Capt G. [redacted] and Mr. [redacted] Baskin, EAL pilots, and obtained their signed statements as to the anomaly observed. Copies of these statements together with drawings executed by Chiles and Whitted are appended as Exhibit "A". On 31 July 1948, Maj Llewellyn personally interviewed Mr. [redacted], the sole passenger awake during the hours of 0140 and 0245 EST, as to what he saw while a passenger aboard the DC-3 piloted by [redacted]. His statement is attached as Exhibit "B".

2. Following the above interrogations, requests were disseminated to Hq USAF, Naval and commercial airlines by priority teletypes 2 Aug 1948 requesting data on aircraft movements in the general vicinity of Alabama, Florida, Mississippi, Georgia, South Carolina, Tennessee and North Carolina. Charts of these aircraft movements are submitted as Exhibit "C".

3. In compliance with Hq AMC letter dated 6 July 1948, the Sixth Office of Special Investigations (IG) District undertook an investigation pertaining to an aerial phenomenon reportedly seen by various people within the 6th OSI District. A complete report of the various sightings, pages 1-16 is appended hereto as Exhibit "D". Further reports and statements as to reliability are also appended.

4. After the statements were received, a complete analysis as to the date and time, geographical location, and description of the object was charted. The completely assembled data, i.e., statements of witnesses, reliability statements, airline schedules and the collated data chart were forwarded to the various technical agencies to effect an evaluation and interpretation of the technological factors involved.

C. FACTUAL DATA:

1. The collated data chart (Exhibit "B") was drawn up to effect a trend or pattern in regard to the reported sightings.

a. From this chart it is evident that three or possibly four separate incidents were involved:

- (1) That pertaining to sightings by [redacted], [redacted] and [redacted]
- (2) That of Feldway, [redacted] and [redacted]
- (3) That of [redacted], [redacted], [redacted] and [redacted]
- (4) That of [redacted] Mr. & Mrs. [redacted], Mrs. [redacted] and Mrs. [redacted]

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Air Intelligence Report No. 100-203-79

ANALYSIS OF FLYING OBJECT INCIDENTS IN THE U. S.

Air Intelligence Division Study No. 203
10 December 1948.

Directorate of Intelligence and Office of Naval Intelligence

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ANALYSIS OF FLYING OBJECT INCIDENTS IN THE U. S.

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4. Apparently it is not of domestic origin since a thorough check of US flight schedules, both commercial and governmental, revealed that in only one instance did the reported flight paths cross. (See chart included as Exhibit "1"). This single exception was the flight in a northeasterly direction of a C-47 enroute Robins AFB Base to Clatsop Field, Pa. Its time of departure would have enabled it to have passed through the approximate areas on the 24 July 1948 where the sightings were reported. However, the factors of speed, direction of flight, maneuvers, configuration, lights and other factors rule out this one possibility.

5. Objects similar in configuration have been reported as follows:

- a. Rocket-like objects capable of immense speed were seen during the past summer in broad daylight in Denmark, Norway and Sweden.
- b. A wingless aircraft was observed moving at high speed at Obrechtstreet, Arnheim, The Hague, Holland. The object was seen intermittently through clouds and was reported to have two decks.

6. Flying Fuselages (Torpedo or Cigar-Shaped Body)

a. While the cigar or torpedo shaped body represents an efficient form for the fuselage of an airplane or the body of a guided missile, in neither case has it been used as a primary lift producing surface. However, an extension of the Prandtl theory of lift indicates that a fuselage of the dimensions reported by the Eastern Airlines note (enclosed) and in the Montgomery, Alabama, incident could support a gross weight of approximately 12,000 pounds at an arbitrarily chosen stalling speed of 150 miles per hour, conservatively estimated. The Prandtl theory probably gives very conservative values of maximum lift for bodies of this shape. If a lift coefficient twice as great were used (such a value has been given by a German scientist from memory of his wind tunnel researches in Germany), a gross weight of 24,000 pounds could be supported at the assumed stalling speed.

b. Although the craft sighted by [redacted] and [redacted] was reported to be without wings or fins, it is possible it could have been equipped with extensible wings for take-off and landing, contained within the fuselage. In such a case a wing span of nearly 90 feet could be possible. If an aspect ratio of 5 were used (18 ft. mean aerodynamic chord), and if the wing design incorporated slots and flaps, the wing could support 115,000 pounds at a stalling speed of 150 mph. It is possible that the fuselage could also contribute lift with this arrangement, depending upon the incidence of the wing. This type of aircraft could also be partially supported in the take-off and landing condition by the vertical component of the jet thrust, if the landing and take-off took place with the fuselage axis, or the jet stream direction in a vertical or nearly vertical attitude. The further possibility that an extensible rotor, concealed within the fuselage, could have been used, would provide another method for landing and take-off that would allow wingless flight at very high speed. Such a design could result in a relatively large duration of flight and corresponding range.

c. While no stabilizing fins were apparent on the "flying fuselage" reported by [redacted] and [redacted], it is possible that vanes within the jet, operated by a gyroscope system could have provided static stability, longitudinally, directionally and laterally. The same vanes could also have been used for accomplishing static balance or trim, as well as control for maneuvering. A square-tailed body of the type reported with the center of gravity sufficiently far forward can develop, approximately a neutral stability and the possibility exists that definite static stability could be produced by a judicious use of flow-control slots located somewhere along the fuselage. ©

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